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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,001	06/24/2003	Mark W. Miles	5652P021	5989

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EXAMINER

HASAN, MOHAMMED A

ART UNIT PAPER NUMBER

2873

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

2M.

Office Action Summary**Application No.**

10/606,001

Applicant(s)

MILES ET AL.

Examiner

Mohammed Hasan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 9, 14 is/are rejected.
- 7) ☒ Claim(s) 10 - 13, 15, 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Oath/Declaration

1. Oath and declaration filed on 6/24/2003 is accepted.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 5 – 7, and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by Goodwin-Johansson (6,456,420 B1).

Regarding claim 1, Goodwin-Johansson discloses (regarding figure 1) a method of fabricating a MEMS device comprising a prefabricating thin film stack to define the MEM device (10) (column 5, lines 1 – 14).

Regarding claim 2, Goodwin-Johansson discloses (regarding figure 2) thin film stack comprises at least a first layer of a conductive layer (30), a second layer (32) of an

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insulator material, and a third layer (40) of a sacrificial material (column 6, lines 19 – 62, column 8, lines 8 – 15).

Regarding claim 4, Goodwin-Johansson discloses (regarding figure 2) the film stacking comprises a carrier substrate (12), a first layer (30) formed on the carrier substrate, a second layer (32) of insulator material formed on the first layer, a third layer (40) of a sacrificial material formed on the second layer (column 6, lines 19- 62, column 8, lines 8- 15).

Regarding claim 5, Goodwin-Johansson discloses the first, the second and the third layers are formed using a deposition technique (column 7, lines 1- 15).

Regarding claim 6, Goodwin-Johnsson discloses first layer of conductive material is a single metal such as gold (column 6, lines 49 – 50).

Regarding claim 7, Goodwin-Johnsson discloses the insulator material is selected from the group consisting polymeric material (column 6, lines 47 – 48).

Regarding claim 14, Goodwin-Johansson discloses an optical layer (38) deposited between the second and third layer (column 8, lines 41 – 42).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 3, 8, 9 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Goodwin-Johansson (6,456,420 B1) in view of Doan et al (US 2004/0035821 A1).

Regarding claim 3 as applied to claim 1, Goodwin-Johansson discloses all of the claim limitations except operation selected from the group consisting of etching, patterning and deposition. However, Doan et al discloses operation selected from the group consisting gas phase chemical etchant and deposition a sacrificial material (paragraph 0005). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide gas phase chemical etchant and a deposition a sacrificial material in to the Goodwin-Johansson MEMS device for the purpose of manufacturing cost less and to allow manufacture in a standard process as taught by Doan et al (paragraph 0029).

Regarding claims 8 and 9 as applied to claim 4, Goodwin –Johansson discloses all of the claim limitations except a Xenon difluoride gas using for sacrificial material etchable and sacrificial material is selected from the group consisting of silicon, molybdenum, and tungsten. However, Doan et al discloses Xenon difluoride gas using in an etching chamber (paragraph 0077) and the sacrificial material is selected from the group consisting such as tungsten (paragraph 0074). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a Xenon difluoride gas for etching and the sacrificial material with tungsten material in to the Xenon difluoride gas Goodwin-Johansson MEMS device for the purpose of light beam may be modulated in phase, intensity, and polarization direction as taught by Doan et al (paragraph 0003).

Allowable Subject Matter

4. Claims 10 – 13, 15, and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show an optical compensation layer deposited between the first layer and the carrier substrate, the optical compensation layer including a material of a finite extinction coefficient and the optical compensation layer includes material from the group consisting of Zirconia, Hafnia, an oxide, a nitride and a fluoride, and the first layer comprises a plurality of sublayers, at least some of the sub layers being a conductive material, and the third layer comprises at least two sublayers, each of the sublayers alternating with other, wherein each sublayer can be etched by the same release etched but has a different etch chemistry so that the sublayers define etch stops for each other.6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art

Nam et al (US 2004/0061543 A1) discloses flexible mems transducer and manufacturing method thereof and flexible mems wireless microphone.

Stark et al (US 2004/0028849 A1) discloses low temperature method for forming a microcavity on a substrate and article having same.

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Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (571) 272-2331. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272- 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MH
April 11, 2004


Georgia Epps
Supervisory Patent Examiner
Technology Center 2800